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Pollution Control Instrumentation and Equipment

United Kingdom

U.S. DEPARTMENT OF COMMERCE
International Trade Administration

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With the U.K. economy gradually recovering from recession, trade sources are predicting steady 4.8 percent average annual growth in the market for pollution control instrumentation and equipment, from $351.6 million[1] in 1981 to over $467 million in 1987 (see table 1). Having jumped nearly 10 percent in 1981 over 1980, sales are forecast to continue growing as the country gradually implements during 1982-87 the demanding conditions of Phase II of the Pollution Control Act passed in 1974 and selectively adopts European Community (EC) Directives and Recommendations. Attention is expected to focus on treatment of solid and toxic wastes. For U.S. manufacturers, the expanding market is projected to mean import sales of $14.7 million in 1987, representing 3.5 percent yearly increases over the $12 million worth of instrumentation and equipment bought from American sources in 1981 (see table 2).

Passage of numerous environmental acts and statutes over the past two decades has been built on previous laws dating back to the early 1900's; consequently, the United Kingdom is said to have environmental protection legislation that is among the most comprehensive in the world. In lieu of fixed emission standards, the U.K. system adheres to the concept of "best practicable means within the Law." U.K. authorities must also take into account EC Directives requiring member states to set up waste management authorities to ensure environmentally safe disposal. Trade sources note, however, that the most significant impact of recent directives on disposal of toxic solid wastes is expected to come after 1987.

The market for pollution control instruments, valued at just under $40 million in 1981, should approach $58 million in 1987. The projected annual growth of 6.6 percent reflects a trend to more careful monitoring of pollution levels, both for management and enforcement purposes. Despite a strong local industry whose production exceeded total domestic sales in 1981, imports are foreseen expanding their share of the market from 28 percent in 1981 to 34 percent in projected 1987. U.K. manufacturers have the technological know-how to provide most types of instrumentation, but may not be able to meet the anticipated upswing in demand, thus necessitating increased imports.

At $312 million in 1981, sales of pollution control equipment dwarf those of instrumentation. Industry analysts project modest 4.6 percent annual expansion in equipment sales over the 1981-87 period, when a $409 million market is anticipated in projected 1987. Both replacement buying and new installation are expected to contribute to advances in demand. A strong domestic pollution control industry grew up in

[1] All values are shown in U.S. dollars. Local currency data are converted at the following exchange rates: US$1 = 0.5 English pounds (1980 and 1981); and US$1 = 0.66 English pounds (1982). Values for years through 1981 are expressed in current rather than constant dollars; values for 1982 and subsequent years are expressed in 1981 constant dollars.

Table 1. United Kingdom.—The market[1] for pollution control instrumentation and equipment, 1980, 1981, and projected 1987
(in millions of U.S. dollars)

	1980	1981	1987
Instrumentation			
Production	38.6	43.0	55.5
Imports	10.5	10.9	19.5
Exports	13.2	14.3	17.0
Market size	35.9	39.6	58.0
Equipment			
Production	328.8	354.3	442.5
Imports	59.5	61.7	90.8
Exports	100.2	104.0	123.9
Market size	288.1	312.0	409.4
Total			
Production	367.4	397.3	498.0
Imports	70.0	72.6	110.3
Exports	113.4	118.3	140.9
Market size	324.0	351.6	467.4

[1] Size of market equals production (ex factory value) plus imports (c.i.f.) minus exports (f.o.b.).

Source: U.K. Trade Statistics, Department of Environment Statistics, Environmental Control Consultancy Services Data Bank, Trade Association Estimate, JURUE Statistics, and International Trade Administration, Office of Information Product Development and Distribution research report, "The Market for Pollution Control Equipment—United Kingdom" (see Additional Information box).

Table 2. United Kingdom.—Sales[1] of instrumentation and equipment by functional area, 1980, 1981, and projected 1987
(in millions of U.S. dollars)

	1980	1981	1987
Wastewater treatment			
Instrumentation	13.1	14.9	20.8
Equipment	98.5	112.0	142.0
Total	111.6	126.9	162.8
Air pollution			
Instrumentation	10.3	10.7	15.0
Equipment	79.5	82.4	98.0
Total	89.8	93.1	113.0
Noise pollution			
Instrumentation	6.5	7.2	12.5
Equipment	43.5	44.7	72.5
Total	50.0	51.9	85.0
Solid and semisolid wastes			
Hazardous wastes			
Instrumentation	3.5	4.0	5.8
Equipment	28.9	32.5	41.3
Subtotal	32.4	36.5	47.1
Nonhazardous wastes			
Instrumentation	2.5	2.8	3.9
Equipment	37.7	40.4	55.6
Subtotal	40.2	43.2	59.5
All solid and semisolid wastes			
Instrumentation	6.0	6.8	9.7
Equipment	66.6	72.9	96.9
Total	72.6	79.7	106.6
TOTAL	324.0	351.6	467.4

[1] Sales are equivalent to market size, which is domestic production (ex. factory value) plus imports (c.i.f.) minus exports (f.o.b.).

Source: U.K. Trade Statistics, Department of Environment Statistics, Environmental Control Consultancy Services Data Bank, Trade Association Estimate, JURUE Statistics, and International Trade Administration, Office of Information Product Development and Distribution research report, "The Market for Pollution Control Equipment—United Kingdom" (see Additional Information box).

the 1960's and 1970's, and production is forecast to exceed market size throughout the 1981-87 period. Imports, which provided about 20 percent of local requirements in 1981, are forecast to expand their share to 22 percent by 1987 as public and private sector end-users look to innovative treatment processes not available from home vendors.

Competitive Assessment by Functional Category

Though domestic production exceeds market size, foreign manufacturers supplied almost 21 percent of the pollution control instrumentation and equipment sold in the United Kingdom. From $72.6 million in 1981, foreign-sourced shipments are projected to advance at a 7 percent yearly pace to $110.3 million in 1987.

U.S. manufacturers captured 16.5 percent of imports in 1981. While EC vendors as a group far outsold American vendors that year, only German-sourced shipments surpassed those from U.S. factories. Trade sources predict that competition from within the EC, coupled with high U.S. prices based on a strong dollar, could cut into American sales in the future. While U.S. imports are forecast to climb a modest 3.5 percent annually, the American share of imports is projected to decline to 13 percent by 1987 (see table 3).

Wastewater treatment.—As a result of increasingly stringent controls imposed upon public and private discharges to inland waters since 1951, the United Kingdom boasts a high percentage of homes and businesses connected to public sewers. Wastewater treatment budgets focus on operating rather than capital expenditures, so that the market for wastewater instrumentation and equipment is projected to expand only a modest 4.2 percent per annum, from $126.9 million in 1981 to $163 million in 1987 (see table 3).

Instrumentation purchases amounted to $14.9 million in 1981, accounting for less than 12 percent of the wastewater treatment market. Increases averaging almost 6 percent per annum are forecast over the 1981-87 period, with a $20.8 million market projected for the latter year. Technical requirements are changing, and trade sources predict growing use of monitoring, instrumentation control, and predictive analytical techniques. As a result, overseas purchases are expected to gain in importance, rising from $3.5 million (or 23 percent of the market) in 1981 to $5.8 million (or 28 percent of the total) in 1987.

Leading vendors of instrumentation tend to be prominent manufacturers of process controls, including both domestic and foreign-based multinational firms. Supplies to the public sector's Regional Water Authorities (RWA's) include Manning (Techmation) from the United States, as well as the British subsidiaries of such American companies as Bell &

Table 3. United Kingdom.—Imports of pollution control instrumentation and equipment by country of origin, 1980, 1981, and projected 1987
(in thousands of U.S. dollars)

	1980	1981	1987
Wastewater treatment			
Instrumentation			
United States	952	875	1,350
Germany	918	1,050	
Netherlands	544	700	
Switzerland	340	420	
Others	646	455	
Total	3,400	3,500	5,800
Equipment			
United States	3,068	3,375	4,000
Germany	2,832	3,510	
Sweden	1,062	1,485	
Netherlands	944	1,350	
Others	3,894	3,780	
Total	11,800	13,500	27,600
Air pollution			
Instrumentation			
United States	455	420	800
Germany	875	1,050	
Denmark	350	350	
Netherlands	315	280	
Others	1,505	1,400	
Total	3,500	3,500	6,500
Equipment			
United States	6,639	6,205	7,000
Germany	10,286	10,676	
Sweden	5,610	5,749	
Switzerland	1,964	2,190	
Netherlands	1,496	1,551	
Denmark	1,122	1,278	
Others	10,283	8,851	
Total	37,400	36,500	46,000
Noise pollution			
Instrumentation			
United States	195	200	195
Netherlands	645	750	
Sweden	645	650	
Denmark	430	600	
Others	235	150	
Total	2,150	2,350	4,250
Equipment			
United States	220	260	400
Germany	870	1,100	
Netherlands	870	1,100	
Sweden	870	950	
Others	1,520	1,840	
Total	4,350	5,250	7,800
Solid and semisolid wastes			
Hazardous wastes			
Instrumentation			
United States	198	220	260
Germany	234	280	
Denmark	108	120	
Sweden	81	100	
Others	279	280	
Subtotal	900	1,000	1,750
Equipment			
United States	125	212	400
Germany	625	742	
Netherlands	375	451	
Sweden	625	742	
Others	750	503	
Subtotal	2,500	2,650	3,900

Nonhazardous wastes			
Instrumentation			
United States	25	26	40
Germany	100	163	
Netherlands	75	130	
Sweden	60	117	
Others	240	214	
Subtotal	500	650	1,200
Equipment			
United States	175	185	250
Germany	875	925	
Sweden	770	925	
Switzerland	525	370	
Others	1,155	1,295	
Subtotal	3,500	3,700	5,500
All solid and semisolid wastes			
Instrumentation			
United States	223	246	300
Germany	334	443	
Denmark	108	120	
Sweden	141	217	
Netherlands	75	130	
Others	519	494	
Total	1,400	1,650	2,950
Equipment			
United States	300	397	650
Germany	1,500	1,667	
Netherlands	375	451	
Sweden	1,395	1,667	
Switzerland	525	370	
Others	1,905	1,798	
Total	6,000	6,350	9,400
Total imports	70,000	72,600	110,300
Total from the U.S.	12,052	11,978	14,695
U.S. percent share	17.2	16.5	13.3

Source: U.K. Trade Statistics, Department of Environment Statistics, Environmental Control Consultancy Services Data Bank, Trade Association Estimates, JURUE Statistics

Howell, Fischer & Porter, and Foxboro. Preferred sources of instrumentation for industrial buyers include Leeds & Northrup's German subsidiary, Perkin-Elmer, Texas Instruments, Taylor Instruments, and the local affiliate of Rosemount Engineering.

Best bets for American competitors include microprocessor-based systems for monitoring and control. If, as anticipated, an overhaul of the existing national sewerage system is launched after 1984, a number of advanced monitoring and surveillance systems would probably be needed for new pumping station complexes.

Sales of wastewater treatment equipment are forecast to climb about 4 percent yearly, from $112 million to $142 million, over the 1981-87 period. Industry is being required to remove specific ions from sludges and other discharges into surface waters, and is studying such removal techniques as chemical precipitation, membrane separation, and solids consolidation processes. The anticipated overhaul of the wastewater handling system would also entail massive investments in equipment. the RWA's are expected to continue to make up most of the demand.

With production that easily exceeded total market size in 1981, the domestic equipment industry met most of the U.K.'s needs while exporting about one-fifth of its output. Nevertheless, imports are projected to more than double between 1981 and 1987, to $27.6 million in the latter year. U.S. firms could benefit from a growing market for innovative systems, with particular emphasis currently being placed on anaerobic processing, modular filtration and ion exchange systems, and "microbial sequestation" processes designed to remove toxic metal contaminants from wastewater.

Air pollution.—The United Kingdom, in struggling with the London fogs generated by coal smoke, pioneered the control of air pollution. Since the introduction of the U.K.'s first Clean Air Act in 1956, emission of smoke from coal combustion has been cut by over 80 percent. Implementation of Part II of the 1974 Pollution Control Act over the next few years is expected to help boost the market for air pollution control instrumentation and equipment from $93.1 million in 1981 to $113 million in 1987, representing 3.3 percent annual growth. In addition, some industries are said to be studying conversion to coal, and several coal-fired electicity generating plants may have to be expanded in the near future.

Biggest buyers in 1981 were the public sector's energy generation facilities, which are expected to raise their purchases to $24 million in 1987 (see table 4). By that time, however, the two leading industrial buyers, the chemical and allied industries and petroleum refineries, will together spend over $25 million. Major industries usually undertake their own installation designs in cooperation with contractors or equipment suppliers. Influential vendors include such contractors as America's Lodge Cottrell and Sturtevant (U.K. subsidiaries of Peabody and Foster Wheeler of the United States; and, Creusot Loire (France), Siemens (Germany), and the U.K.'s Newton Chambers, Simon Engineering, and Tilghman Wheelbrator.

A relatively rapid 6 percent expansion is predicted for sales of air pollution control instrumentation, from $10.7 million to $15 million, over the 1981-97 period. Trade sources note that Part II of the Act will require industry and utilities to install monitoring equipment and to make the results available for public inspection by July 1985. Environmental authorities are currently studying surveillance systems in use elsewhere in Europe. A substantial hike of 10.9 percent per annum in instrumentation imports is expected between 1981 and 1987: from $3.5 million to $6.5 million. Projections show U.S. firms doing particularly well, with sales almost doubling, from $420,000 to $800,000 over the 81-87 period.

The market for pollution control equipment, forecast to advance just 2.9 percent per annum from 1981 to $98 million in 1987, comprises hardware for both gaseous and particulate emissions. American manufacturers made over half their 1981 sales in the

Table 4. United Kingdom.—Expenditures for pollution control instrumentation and equipment by major user sectors, 1981 and 1987
(in millions of U.S. dollars)

	1981					1987				
	Total	Waste-water	Air	Noise	Solid, semisolid waste	Total	Waste-water	Air	Noise	Solid, semisolid waste
Government										
Water authorities	74.4	66.0	1.8	2.6	4.0	100.5	84.3	2.6	4.2	9.4
Country and municipal authorities	62.4	5.1	11.2	6.2	39.9	85.7	4.5	18.2	10.2	52.8
Energy production	37.4	6.4	20.5	4.9	5.6	50.8	11.9	24.0	8.5	6.4
Nationalized manufacturing	28.5	5.1	11.1	7.5	4.8	38.3	9.0	10.5	13.5	5.3
Private Sector										
Chemical and allied industries	27.9	10.2	9.3	4.9	3.5	39.3	11.6	13.0	9.3	5.4
Petroleum refining	17.9	5.1	7.5	3.4	1.9	27.1	6.2	12.4	6.4	2.1
Engineering: light	11.7	2.5	2.8	5.1	1.3	17.7	3.7	3.2	7.6	3.2
Engineering: heavy	17.0	2.5	3.7	8.4	2.4	29.0	5.5	5.3	13.5	4.7
Food, beverage, and potable spirits	18.5	6.3	4.7	2.3	5.2	23.5	10.5	4.6	3.4	5.0
Cement and glass	15.7	2.5	6.5	2.2	4.5	21.2	3.7	8.4	1.7	7.4
Other	40.2	15.2	14.0	4.4	6.6	34.3	11.9	10.8	6.7	4.9
Total	351.6	126.9	93.1	51.9	79.7	467.4	162.8	113.0	85.0	106.6

Source: U.K. Trade Statistics, Department of Environment Statistics, Trade Association Estimate, JURUE Statistics, Environmental Control Consultancy Services Databank.

market for particulate emission control, with shipments valued at $5.75 million. A broad spectrum of equipment is in use to reduce particulate emissions, including dry mechanical collectors, wet scrubbers, bag filters, and electrostatic precipitators. For gaseous emissions, particularly SO_2, on the other hand, the United Kingdom has traditionally relied on dispersion of pollutants into the upper atmosphere via tall stacks. U.S. firms were able to sell just $456,000 worth of gaseous control equipment, and are forecast to raise that volume to only $500,000 by 1987. More sophisticated control methods may be required in the future as a result of growing concern over acid rain in other EC countries.

Noise pollution.—Statutory legislation controlling noise pollution is contained in Part III of the 1974 Pollution Control Act, which in 1983 had not yet been implemented. Worker health and safety form the basis for current regulations requiring noise control on the job. As result, an 8.6 percent annual expansion is projected in the market for noise pollution instrumentation and equipment, from $51.9 million in 1981 to $85 million in 1987. The emphasis on workplace noise control is reflected in the largest buyers, heavy engineering firms in the private sector and nationalized manufacturing in the public sector.

Sales of noise pollution control instrumentation amounted to only $4 million in 1981, and are expected to rise to $5.8 million by 1987. Devices sold on the U.K. market include conventional sound level meters, instruments for measuring sound over extended periods, graphic level recorders, tape recorders, and oscilloscopes. Specialized instruments are often purchased from abroad, with imports accounting for about 30 percent of projected 1987 sales. Sound level monitoring instruments should comply with British Standards, which are being revised. U.S.-built meters currently on the market that use the Walsh-Healey system for measuring noise dose are considered incompatible with the new requirements. Therefore, trade sources expect U.S. firms to supply instruments valued at only $195,000 in 1987, down from $200,000 in 1981.

Domestic vendors dominate the $44.7 million (in 1981) market for noise control equipment, supplying about 90 percent of local needs. Such firms as Serk Visco, Fibreglass, British Gypsum, Newalls Insulation, and Spencer & Halstead provide noise and vibration control equipment, noise suppression equipment, insulation, acoustic panels and enclosures, and personal protection devices. By 1987, sales of $72.5 million are anticipated, including imports worth $7.8 million. U.S. vendors can expect to sell equipment valued at some $400,000.

Solid and semisolid hazardous and nonhazardous wastes.—The disposal of solid and semisolid wastes in the United Kingdom is under the direct control of central and municipal governments. As a result of EC Directives charging member states with environmentally sound disposal of all kinds of wastes, trade sources anticipate growing demand for both instrumentation and equipment. The market is projected to expand some 5 percent annually, from almost $80 million in 1981 to $106.6 million in 1987.

Sales of instrumentation and equipment for handling hazardous wastes amounted to $36.5 million in 1981 and are forecast to exceed $47 million by the end of the 1981-87 period. One EC Directive defines a list of toxic and dangerous substances and requires that wastes containing these should be disposed of only at government-run or government-controlled facilities. In the United Kingdom, these government-controlled facilities are operated under contract by such organizations as Cleanaway Ltd., the Harwell Laboratory of the Environmental Safety Group, and Re-Chem International. Industry sources are confident that

improved treatment of hazardous waste can be handled by these disposal centers, which are said to have some 40 percent of their capacity unused and available.

Nonhazardous waste also presents a growing problem, and purchases of equipment and instruments for its disposal are projected to rise to nearly $60 million in 1987, up from $43.2 million in 1981. Disposal of nonhazardous solid and semisolid waste is becoming increasingly expensive to industry, which must pay municipalities much of the cost of operating specialized facilities. As a result, firms with acute waste disposal problems, such as those in the automobile, electronics, and food processing sectors, have been studying the feasibility of small incineration units, combined with heat recovery processes. Other firms are turning to production techniques that generate less waste.

A relatively, rapid 6 percent annual expansion is predicted for purchases of instrumentation, from $6.8 million in 1981 to $9.7 million in 1987. Sales growth is spurred by the EC Directives on hazardous substance management, which are likely to require instruments for more stringent analysis and evaluation of wastes. Acceptance of the directives would mean close monitoring of hazardous waste levels; conversely, U.K. industry will need accurate records of the hazardous substance content of sludges and other wastes to make a case against the new rules. Imports, which supplied about 25 percent of the market in 1981, are foreseen expanding their share to 30 percent, or $2.95 million, by 1987 as public and private sector buyers look to sophisticated, specialized instruments.

At about $73 million in 1981, sales of equipment loom over those of instrumentation. Domestic vendors dominate, supplying about 90 percent of the market forecast to rise to $97 million in 1987. Local engineering companies with experience in designing refuse disposal sites include W. S. Atkins & Partners, Ewbank Design Partnership, John Haiste & Partners, Mertz & McLellan, Warren Springs Laboratory, and the National Industrial Fuel Efficiency Service. Buyers' adoption of sophisticated sorting of solid and semisolid waste for resource recovery has been slow. Equipment buyers have studied such techniques as separation at the source and separate collection, recovery by mechanical separation, as well as air classification, laser and optical sorters, and electromagnetic separation. Emphasis here currently rests on the potential of central sorting stations, with particular attention to the derivation of fuel from wastes. Remaining problems, which could present market opportunities for U.S. equipment vendors, include removal of ink from waste paper, methods for type pyrolysis and rubber regeneration, and acceptable blending of recovered glass.

Major Purchases

While the overlap between Government and business in the United Kingdom makes a clear distinction between the two entities difficult, trade sources nevertheless attribute about 58 percent of 1981 pollution control expenditures to the public sector. If nationalized manufacturers are excluded from the public sector, however, spending is split almost evenly between Government and industry. A similar breakdown of expenditures is predicted for 1987.

Current pollution control efforts are driven primarily by two pieces of legislation passed in 1974: the Control of Pollution Act (COPA) and the Health and Safety at Work Act (HSWA), both of which build on earlier acts and statutes dating back to the first quarter of the century. To avoid burdening industry with extensive regulations during hard economic times, the implementation of Part II of COPA was delayed until recently. A five-phase implementation process was launched in 1982, with creation of an administrative framework, formulation and publication of official discharge registers, and remediation of shortcomings to be completed by mid-1986. Thereafter, implementation of legislation is expected for boats and offshore facilities.

Government responsibilities for pollution control and waste management are generally split along functional lines, with the Department of Environment overseeing overall environmental quality and ensuring that legislation is enforced. All aspects of water quality are handled by the RWA's (in England) or Water Boards (in Scotland, Wales, and Northern Ireland), while responsibility for waste disposal rests with municipal authorities, which also administer some aspects of public health. This entire environmental infrastructure is subject to the political and economic dictates of the central Government. While the public sector also operates a number of important corporations whose activities have environmental implications, these are expected by the current administration to act more like private businesses and are in some cases being returned to private ownership. As a result, they are more appropriately considered buyers in the industrial rather than the public sector.

Leading purchasers in the public sector include the water authorities, county and municipal authorities, public utilities, and nationalized manufacturers. Together water authorities and local government accounted for some 39 percent of the total market, a share they are expected to maintain through 1987. The water authorities, profiled below, concentrate their expenditures on wastewater treatment (88 percent in 1981), while county and municipal authorities devote two-thirds of their pollution control equipment budget to solid waste management. As they expand existing treatment facilities for the disposal or destruction of

hazardous waste, these local authorities are expected to step up their investment in pollution control hardware some 5 percent annually, to almost $86 million in 1987.

Energy generation facilities are forecast to spend some $50 million on instrumentation and equipment in 1987. This sector, which encompasses production, transmission, and distribution of both gas and electricity, accounts for the largest share (22 percent) of the market for air pollution equipment. The monitoring and control of particulate emissions is a major concern, and trade sources note that international pressure could also lead to stepped up monitoring of gaseous emissions.

Steelmaking dominates the State-owned manufacturing sector, which is forecast to boost its spending on pollution control instrumentation and equipment from $28.5 million in 1981 to $38.3 million in 1987. Anticipated restrictions on metals concentrations in effluent are expected to account for much of the increase. The British steel industry has already invested heavily in air pollution control, and additional expenditures in this field are likely to be restricted to replacement buying and controls on new facilities.

In the private sector, such process industries as chemicals and allied products, petroleum refining, and food and beverages account for the lion's share of instrumentation and equipment purchases. Chemicals manufacturers, profiled below, outspent any other single industry by at least 55 percent in 1981. Despite increases in investment by other sectors, chemicals and allied products should continue to account for some 20 percent of private sector pollution control equipment expenditures with purchases valued at $39.3 million in 1987.

Fastest growth is anticipated for purchases by the heavy engineering industry, which are forecast to climb some 9 percent a year over the 1981-87 period. Both noise pollution and the monitoring and control of particulates are expected to receive attention as this U.K. industry works its way out of a prolonged slump. Also slated for swift expansion is pollution control investment in the petroleum refining industry, whose spending here is projected to rise from $17.9 million to $27.1 million between 1981 and 1987. Notwithstanding the uncertain investment climate for new production facilities, this industry remains active in the implementation of environmental projects to control air pollution (gaseous emissions and odors), refinery wastewater and sludges, and noise.

Two sectors are profiled below. Water authorities represent the largest source of investment in the public sector, while chemical and allied industries are projected to account for the biggest portion of private industry spending.

Water authorities.—With expenditures of $100 million in 1987, water authorities are foreseen making up 21.5 percent of the projected market. The sector is comprised of ten water authorities in England and Wales, as well as boards in Scotland and Northern Ireland. Despite a central Government policy of freezing Government funding to water authorities, their plans indicate expenditures increases of some 7 percent per annum over the 1983-86 period.

Over the 1982-87 period, trade sources anticipate the United Kingdom receiving increasing pressure to limit the discharge of heavy metals and toxic materials into the European environment, particularly the dumping of sewage sludge at sea. The Department of the Environment has already launched a series of research projects designed to remove metals from wastewater. As the water authorities respond to this pressure, growing demand is expected for identification and measurement instrumentation for metals in water and sludge, as well as for specific removal techniques such as encapsulation prior to landfill. Instrumentation and monitoring devices are projected to account for some 15 percent of 1987 spending.

Spending on other types of pollution control by water authorities also revolves around the treatment and disposal of wastewater sludges. The more than twofold expansion in solid waste instrumentation and equipment between 1981 and 1987 reflects the sector's growing concern with disposal of contaminated sludges. Air pollution expenditures, projected at only $2.6 million in 1987, can be attributed to sludge digestion and incineration, while investment in noise pollution control is associated with the suppression of noise from processing equipment.

Chemicals and allied industries.—Manufacturers of chemicals and allied products purchased pollution control instruments and equipment worth almost $28 million in 1981. Although the U.K. chemicals industry expects to limit its overall capital spending, the proportion of investment devoted to environmental, health and safety, and energy reduction measures is running well above levels observed during the 1970's. Like other industrial buyers, chemical companies will have to comply with the tighter regulations associated with implementation of COPA Part II. As a result, steady expansion is anticipated in pollution control equipment purchases.

Fastest growth is projected in the acquisition of equipment for controlling noise and disposing of solid waste. Expenditures on noise pollution control are set to rise by more than 11 percent annually, from $4.9 million in 1981 to $9.3 million in 1987, as plant managers strive to insulate machinery and equipment in the industry's many individual manufacturing processes. Noise monitoring activity is also expected to increase.

Purchases of instruments and equipment for the treatment and disposal of solid and semisolid chemical wastes are projected to expand from $3.5 million to $5.4 million between 1981 and 1987. The diversity of the industry and its products means that a broad

spectrum of processes are used to treat and dispose of residues and sludges, though the biggest hikes in spending will arise in response to the need to manage toxic or hazardous wastes.

Wastewater treatment is expected to account for 30 percent of the industry's pollution control budget. Most of these expenditures reflect replacement buying, though trade sources see a need for manufacturers of fine chemicals to develop membrane and resin adsorptive systems for materials separation and materials recovery.

Ranking second to wastewater treatment expenditures in 1981, the chemicals industry's purchases of air pollution equipment are projected to advance from $9.3 million to $13 million by 1987, accounting for one-third of the industry's projected investments in pollution control hardware. The increase will reportedly be devoted to controlling odors and gaseous emissions. some of the new instruments will be associated with the disposal of toxic wastes.

Market Access Data

The most important distribution channel for U.S. and other foreign suppliers consists of what trade sources call "providers of systems," who require both components and entire modular units for incorporation into their plant designs. Both Government authorities and private industry are increasingly contracting with such firms to provide a complete package, so that even equipment vendors who provide turnkey systems are required to take on a subcontractor role. Operating within this system are the U.K. subsidiaries of American and other foreign manufacturers who purchase components overseas and channel them through their U.K. organization.

A wide range of agencies also handle imported pollution control instrumentation and equipment for both large and small suppliers, including some new-to-the-market Japanese firms. In recent years, the high cost of maintaining inventory has caused distributors to run down their stocks and forced many manufacturers to ship directly from the factory.

Capital and operating costs are the major factors influencing equipment selection. And buyers are putting increasing emphasis on financing. They are also demanding—and getting—more rigorous service and warranty contracts. Having such terms guaranteed by the vendor removes one of the incentives for end-users to buy from a domestic supplier.

Trade and Technical Regulations

Most items of pollution control instrumentation and equipment imported into the United Kingdom from outside the EC carry duties of 5 to 8 percent ad valorem; only electrical measurement instrumentation is subject to a higher 12.3 percent tariff. All imports, as well as local production, are also subject to a 15 percent value added tax.

Despite continuing efforts to rationalize engineering standards throughout the EC, the United Kingdom retains its own set of British Standards Institute (BSI) standards. Some associations of local manufacturers regularly lobby the Government to incorporate adherence to these BSI standards in the terms and conditions of public sector contracts. More than other EC countries, however, the United Kingdom accepts the validity of all major standards, including ASA and German Institute for Standards (DIN).

Additional Information

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Market Analysis Branch, Rm. 2012
International Trade Administration
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